
Space Weather Forecast

Issued on Monday 17 February 2025 at 00:17 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Moderate flares likely. Chance of G1/Minor storms Day 1 (17 Feb).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is currently Low, with just Common-class flares in the last 24 hours.

There are currently twelve sunspot regions on the visible disc. The three regions of most interest are near south centre disc and perhaps two regions in the southeast. The region near south centre disc consists of a large central spot surrounded by small peripheral spots, but with some minor magnetic complexity. One of the regions in the southeast is rotating into a better view, but so far appears to be relatively straightforward with any apparent complexity likely due to lingering foreshortening of the view near the limb. Oncoming regions in the southeast and in the northeast are both showing apparent growth, although some of this could be due to them rotating into a better view. A region in the southwest is also becoming more difficult to assess as it approaches the limb. All other spots appear relatively simple at the present time.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed in the past 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds showed a waning connection to a coronal hole fast wind. Wind speeds were elevated to strong, initially near 600 km/s but slowly declining to around 520 km/s. The Interplanetary Magnetic Field remained weak throughout, with the north-south component also weak and variable. Geomagnetic activity was Quiet to Active (Kp 2-4).

Energetic Particles / Solar Radiation: Solar radiation was at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Moderate, with isolated M-class flares likely.

Solar Wind / Geomagnetic Activity: Several CMEs were observed leaving the Sun on February 14th and 15th. Confidence in all of these CMEs remains low, but there is a chance of glancing impacts between Days 1-3 (Feb 17-19). However, it is considered much more likely that these features will miss behind Earth's orbit. Coronal hole fast winds are starting to wane, and are expected to continue to decline through this period, likely to near background levels by Day 4 (20 Feb).

Predominantly Unsettled to Active geomagnetic conditions are expected at first, with a chance of G1/Minor geomagnetic storm (Kp 5) intervals due to coronal hole influence or perhaps glancing CMEs. As wind speeds ease, so geomagnetic activity is expected to wane, with just a slight chance of any CME influence increasing geomagnetic activity again.

Energetic Particles / Solar Radiation: Solar radiation levels are likely to persist at background levels, with a marginally increasing slight chance of rising above the S1/Minor radiation storm threshold, as the current active regions move west.

Geomagnetic Storms

Geomagnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	30	10	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 (M Class)	No	60	60	60	60
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						